

technical catalogue

air

8÷60 KW

Air-cooled condensers
with axial fans

BLUE  **BOX**
AIR WITH CARE

English

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Description of the range

Remote-controlled **AIR** condensers operate with R410a: a cooler of the latest generation.

The high efficiency exchangers feature specially designed fins and copper pipes. They are devised to withstand the pressure of new cooling liquid (R410a). Step between the fins is 2.1 mm for the entire range.

The exchangers are designed in accordance with the most stringent production standards and can operate at a max working pressure of 42 bar.

Particular care has been taken with the side supports, which have been made to prevent damage to the pipes.

The self-bearing frame is made of RAL 9002 pre-painted galvanized sheet metal.

The motor fans are selected and controlled in accordance with our specifications and the most up-to-date safety standards, are attached to the structure with a special secure, anti-vibration system and have an external rotor with single-phase 230V supply.

The exchangers can be supplied with pre-painted aluminium or copper fins. Cataphoresis painting is also possible.

Important

1. Retain this manual for the entire life-span of the machine.
2. Read all the instructions carefully prior to installation or any other operation.
3. Contact the manufacturer or retailer for any information or about unintended use.
4. The model must be installed, started up and managed exclusively by qualified personnel in accordance with local legislation.
5. Do not tamper with the machine's components.
6. Use of the machine in unspecified conditions is considered incorrect and improper.
7. The machine must be installed in accordance with local legislation and conditions specific to the project.
8. The manufacturer assumes no responsibility for problems, breakage or accidents caused by non-compliance to the instructions in this manual.

This manual identifies state of the art performance of the product at the time of going to market. The design and structure are constantly improved so the data herein may be updated at any time.

AIR – Applications

1. Description of the model:
2. Air condenser with axial-fan motors able to condense cooling fluids in steam compressor systems.
3. The machine must be used only for its intended purpose: improper use exonerates the manufacturer from all responsibility.
4. The machine's minimum degree of protection is IP44/54.
The machine is supplied with an exchanger of cleanliness according to DIN 8964. The condenser models are loaded with dry air at 2 bar and feature pressure connections of 1/4" SAE. The product conforms to the provisions of directive 73/23 EEC on low voltage amended by directive 93/68 EEC according to standards CEI 61-50.

Identification

Provide the name and serial number on the machine's data plate for any communication and when requesting assistance or spare parts.

Inspection – Storage

1. Check the goods immediately upon receipt for any damage caused during transportation.
2. When handling, do not apply undue pressure on the packaging that should always be kept in the position specified in the picture above.
3. The packaged machine must be handled by qualified personnel with one or more forklift trucks of suitable weight-bearing capacity (see the table of dimensions). The forks on the truck must be longer than the depth of the packaging to prevent it from tipping. Avoid all sudden movements and do not stand in the handling area.
Always strap the machines to the lifting devices before they are lifted. Sharp or sudden movements could cause the machine to overturn.
4. The machine must be wrapped in its original packaging and stored in a room at a mild temperature and out of the way of bad weather.
5. Do not place any other material on top of the packaging.

Installation instructions

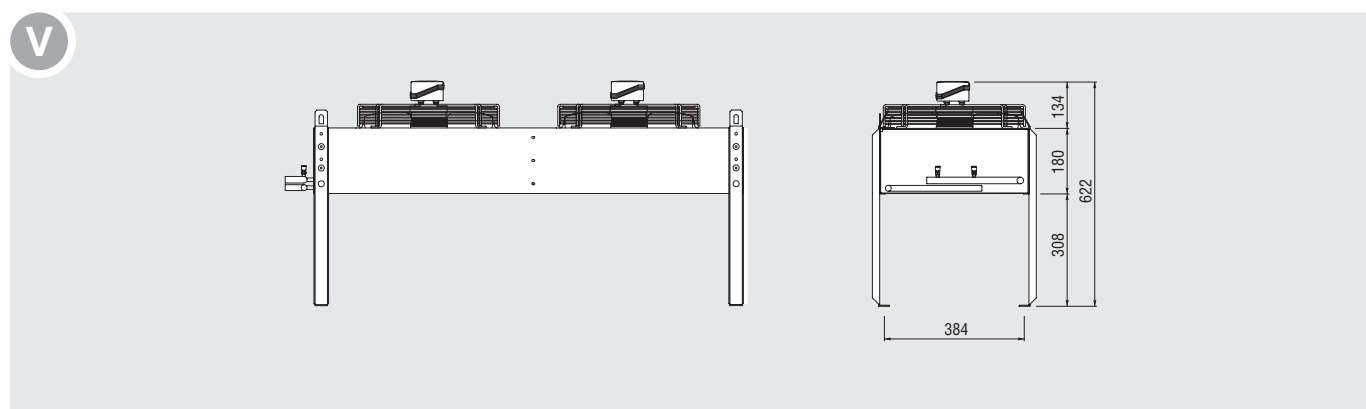
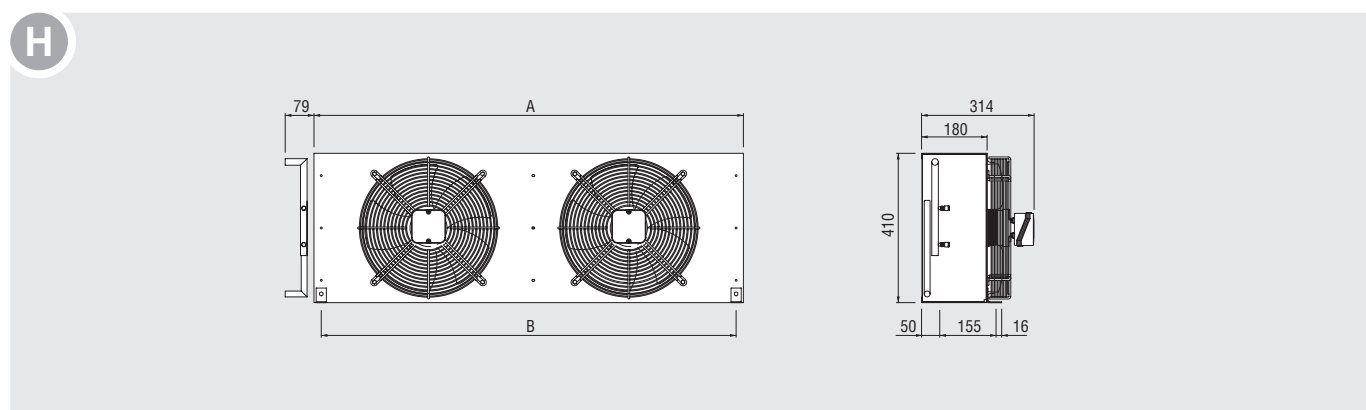
1. The machine is equipped with axial-fan motors that not able to withstand additional static pressure, so it cannot be ducted, air suction filters must not be installed, and there must not be strong air currents against the flow of the fan motors.
2. The device should preferably be installed outside. If not, there must be an air supply without any additional static pressure.
3. The foundation base must be able to withstand the weight of the machine during operation (see the tables on dimensions).
4. The device must be firmly attached to the foundation base to prevent sound transmission. Use sound absorbers if necessary.
5. Ensure sufficient space for air circulation and maintenance (consult the installation chapter)
6. There must not be any foreign bodies and dust in the installation area that could obstruct the exchanger.
7. The installation area must offer sufficient protection against atmospheric agents (e.g. flooding)
8. The installation area must conform to prescriptions of local legislation.
9. This device must not be installed in atmosphere that is explosive, acid or not compatible with its materials.
10. Ambient temperature must never be below -20°C or exceed 45°C. If the device is installed in an area at a temperature under 5°C, check that snow or ice cannot obstruct the fins and impede rotation of the motors.
11. Ensure that the cooling gas can enter from above and that the liquid comes out at the bottom.

Residual risks

1. The exchanger's fins are sharp so take all precautions to prevent wounding.
2. Do not touch the collectors as they can become extremely hot.
3. Hot air from the fan motors can cause discomfort for personnel and damage to objects..

Technical specifications of models with fan of Ø350 mm

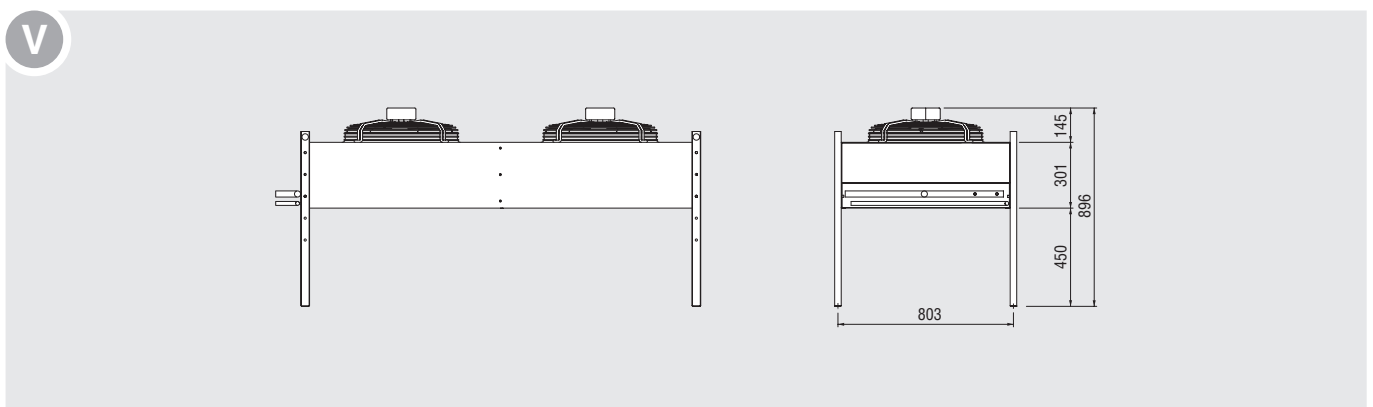
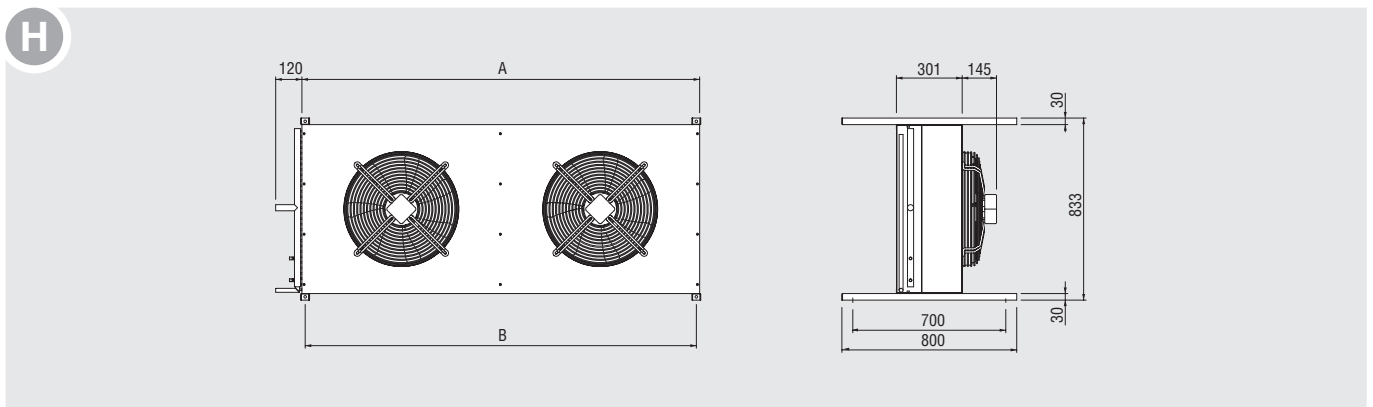
Model	AIR	351A4	352A3	352A4	352B2	352B3
Capacity	kW	7,8	12,2	14,4	7,6	9,5
Air capacity	m ³ /h	2200	4230	4000	3000	2900
RPM		1420	1420	1420	945	945
Absorption	W	190	380	380	150	150
	A	0,96	1,92	1,92	0,74	0,74
LpA 10m	dB (A)	45	48	48	35	35
Connections	In (mm)	16	18	18	18	18
	Out (mm)	16	16	16	16	16
Fan motors	n. x Ø mm	1 x 350	2 x 350	2 x 350	2 x 350	2 x 350
External surface	m ²	20,5	26,1	34,7	17,4	26,1
Internal surface	m ²	0,91	1,15	1,53	0,77	1,15
Front surface	m ²	0,26	0,44	0,44	0,44	0,44
Interior volume	dm ³	1,66	2,06	2,74	1,37	2,06
Weight	Kg	15,7	24,4	27,1	22,1	24,4



Fan motors	(n. x Ø mm)		1 x 350	2 x 350
Dimensions	(mm)	A	729	1179
		B	689	1139

Technical specifications of models with fan of Ø500 mm

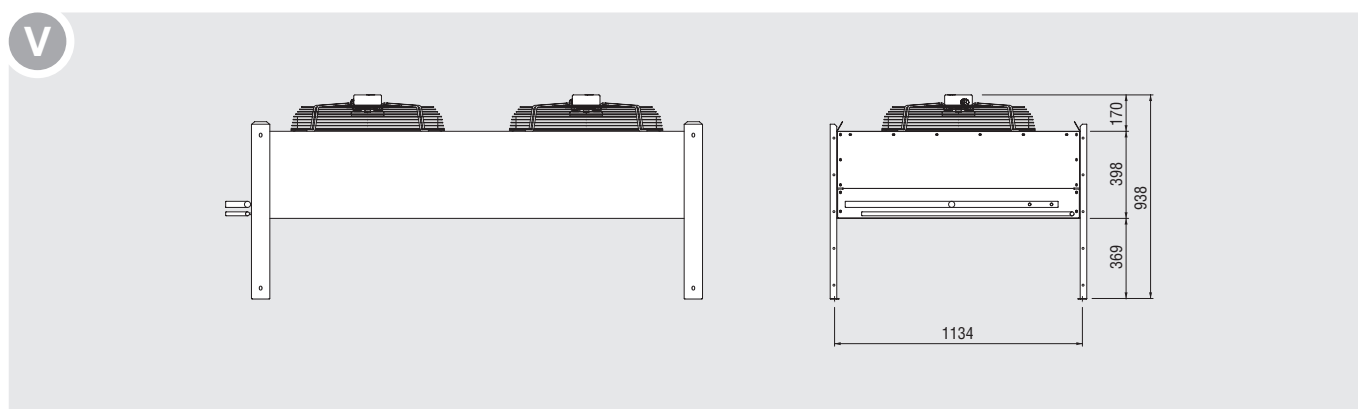
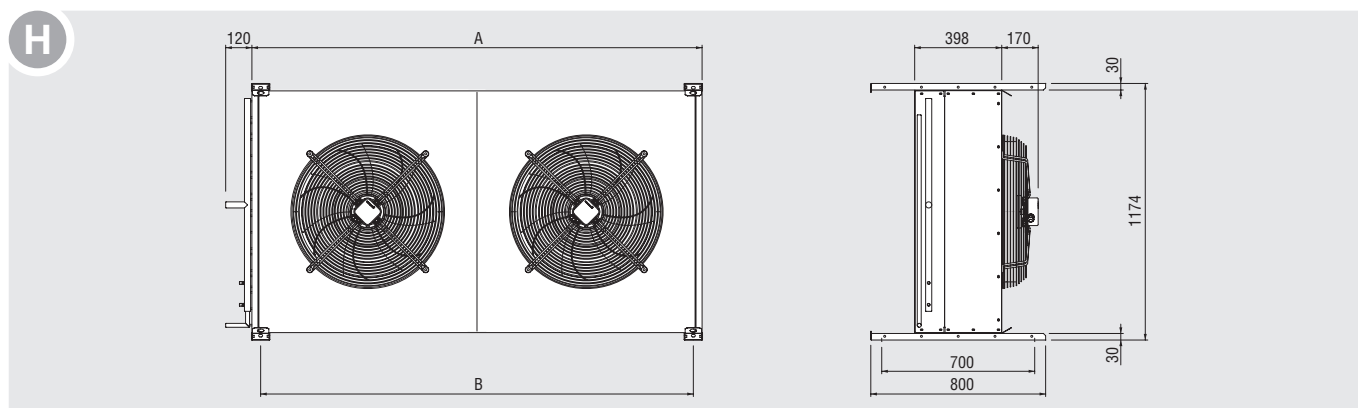
Modello	AIR	501A3	501A4	502A2	502A3	502A4	501B3	501B4	502B4
Model	kW	19,2	22,1	30,2	38,3	44,3	15,5	17,5	34,6
Air capacity	m ³ /h	6700	6500	13800	13400	12925	4850	4700	9300
RPM		1210	1210	1210	1210	1210	890	890	890
Absorption	W	770	770	1540	1540	1540	290	290	580
	A	3,4	3,4	6,8	6,8	6,8	1,25	1,25	2,5
LpA 10m	dB (A)	51	51	53	53	53	39	39	42
Connections	In (mm)	22	22	28	28	28	22	22	28
	Out (mm)	16	16	18	18	18	16	16	18
Fan motors	n. x ø mm	1 x 500	1 x 500	2 x 500	2 x 500	2 x 500	1 x 500	1 x 500	2 x 500
External surface	m ²	39,1	52,1	52,1	78,2	104,2	39,1	52,1	104,2
Internal surface	m ²	2,8	3,7	2,3	5,6	7,5	2,8	3,7	7,5
Front surface	m ²	0,66	0,66	1,32	1,32	1,32	0,66	0,66	1,32
Interior volume	dm ³	3,1	4,1	4,1	6,1	8,1	3,1	4,1	8,1
Weight	Kg	40,1	45,3	60,7	71,0	81,3	40,1	45,3	81,3



Fan motors	(n. x ø mm)		1 x 500	2 x 500
Dimensions	(mm)	A	940	1820
		B	910	1790

Technical specifications of models with fan of Ø560 – 630 mm

Model	AIR	562A3	562A4	631B3	631B4	632B2	632B3	632B4
Capacity	kW	56,4	64,5	26,4	30,1	41,6	50,9	60,3
Air capacity	m ³ /h	19000	18750	8550	8350	17800	17100	16700
RPM		890	890	900	900	900	900	900
Absorption	W	1400	1400	780	780	1560	1560	1560
	A	6,4	6,4	3,5	3,5	7	7	7
LpA 10m	dB (A)	55	55	45	45	48	48	48
Connections	In (mm)	35	35	28	28	28	35	35
	Out (mm)	22	22	18	18	18	22	22
Fan motors	n. x Ø mm	2 x 560	2 x 560	1 x 630	1 x 630	2 x 630	2 x 630	2 x 630
External surface	m ²	124,3	165,8	62,2	82,9	82,9	124,3	165,8
Internal surface	m ²	8,9	11,9	4,5	6,0	6,0	8,9	11,9
Front surface	m ²	2,1	2,1	1,05	1,05	2,1	2,1	2,1
Interior volume	dm ³	9,7	12,9	4,9	6,6	6,4	9,7	12,9
Weight	Kg	112,3	124,9	60,1	66,4	88,7	112,3	124,9



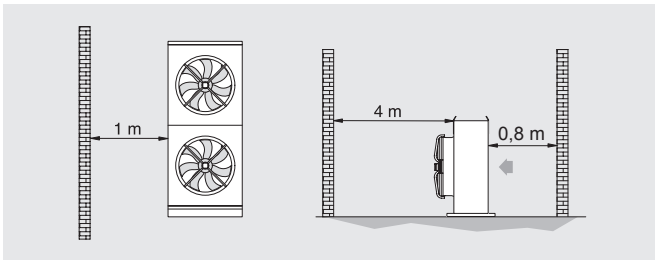
Fan motors	(n. x Ø mm)	1 x 560/630		2 x 560/630	
Dimensions	(mm)	A	1060	2060	
		B	980	1980	

Installation

Minimum distance from the walls (all models)

Version "V"
(view from above)

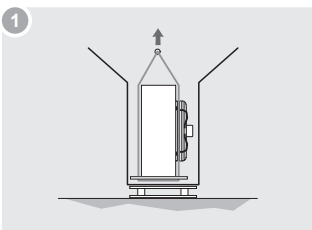
Version "H"



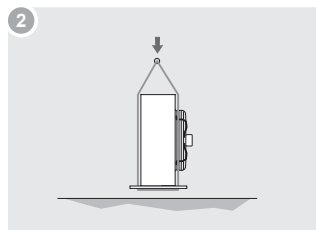
Warning:
During the handling phase, special care must be taken to prevent damage to the fluid collectors.

Installation of AIR models Ø350 mm

Configuration H

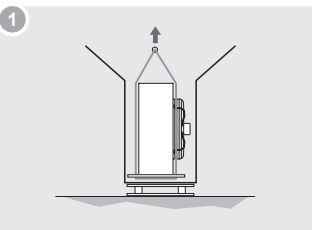


1 Sling the machine and remove from its packaging.

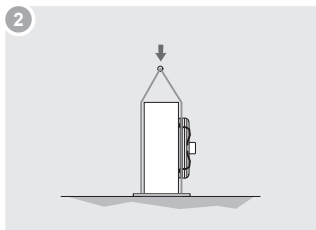


2 Place the machine on the ground and immediately remove the LDPE protective film from the frame.

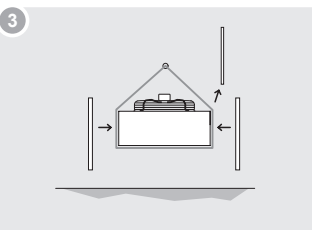
Configuration V



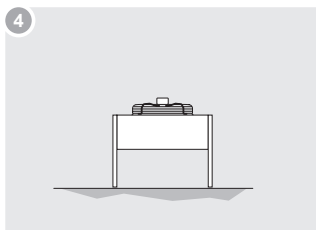
1 Sling the machine and remove from its packaging.



2 Place the machine on the ground and rotate it 90°



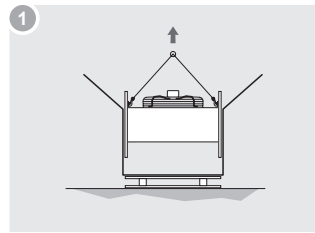
3 Remove the support bracket for version H and attach brackets V.



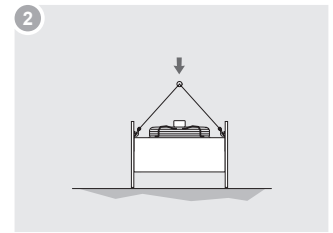
4 Place the machine on the ground and immediately remove the LDPE protective film from the frame.

Installation of AIR models Ø 500 - 560 - 630 mm

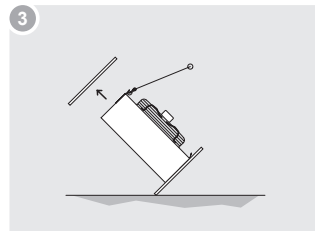
Configuration H



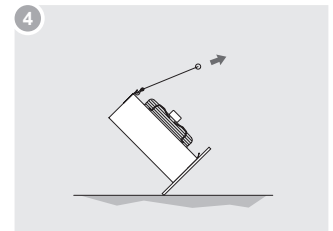
1 Fasten the machine with the lifting brackets.



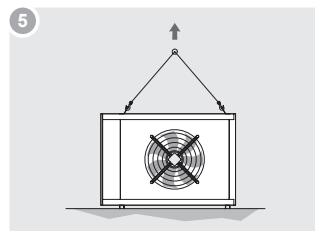
2 Place the machine on the ground.



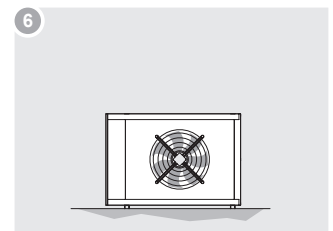
3 Remove the upper brackets.



4 Tip the machine.

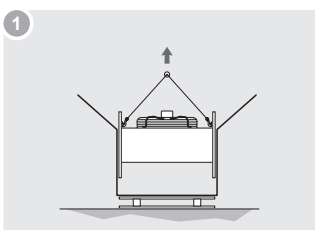


5 Move the machine to the installation area and fasten it in place with suitable screws.

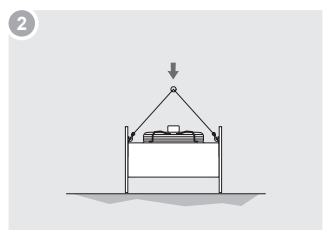


6 Immediately remove the LDPE protective film from the frame.

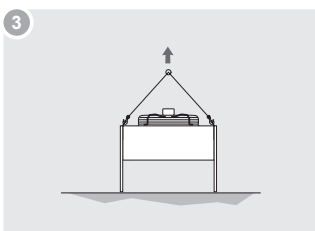
Configuration V



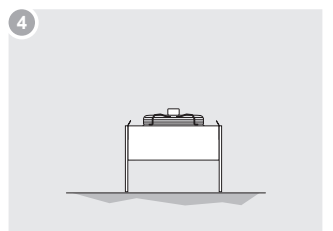
1 Fasten the machine with the lifting brackets.



2 Place the machine on the ground.



3 Move the brackets when the machine is in its final position.



4 Immediately remove the LDPE protective film from the frame.

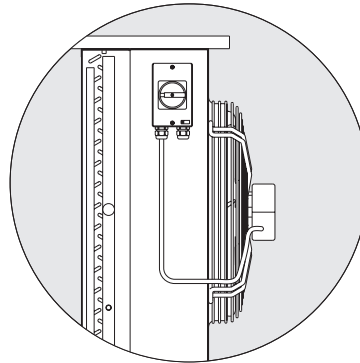
Wiring

Ensure that the main disconnecting switch is open before carrying out any machine operations.

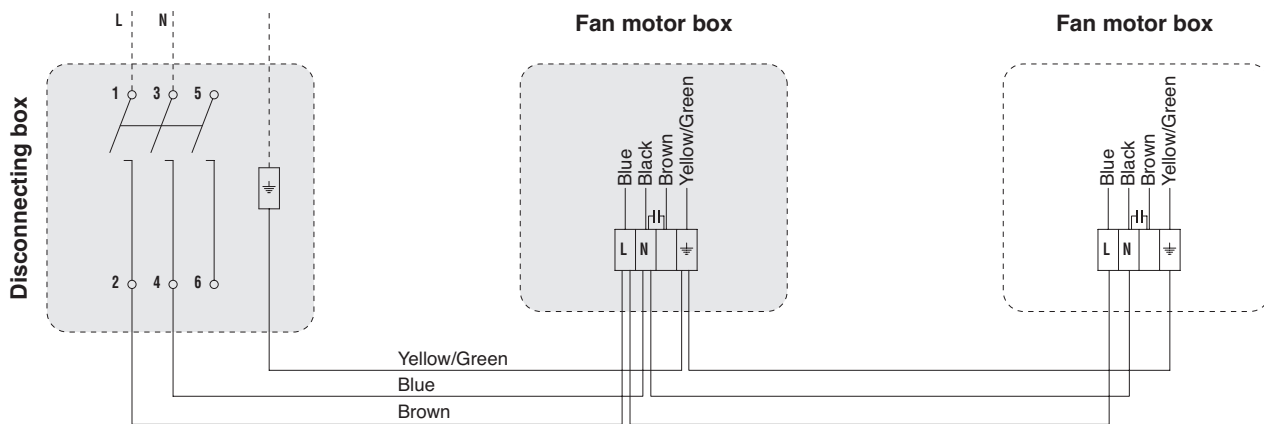
Check conformity of the electric supply to the product's electrical characteristics.

Before connecting the product to the mains supply, check for presence of the electric supply sectioning and disconnecting devices, electric shock prevention devices, equipment protection devices and any other safety devices required by current legislation. The product is supplied with a main disconnecting switch for the electric supply to the fan motors.

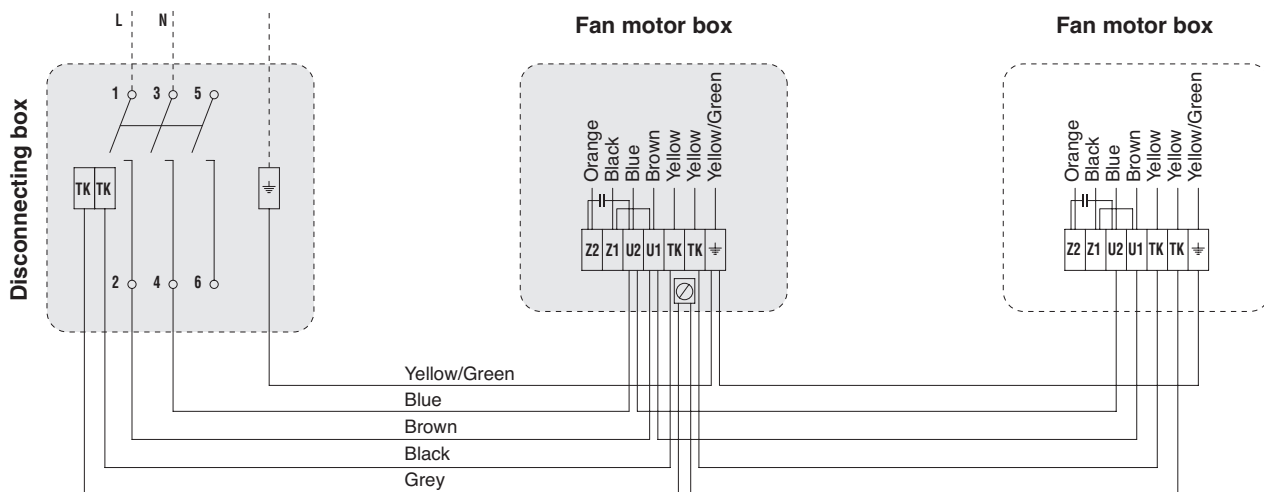
Specific position of disconnecting switch



Connection of 230V/1/50Hz motors of ø 350 mm models



Connection of 230V/1/50Hz motors of ø 500 – 560 – 630 mm models



Internal protection thermal contacts

The thermal contacts are drive devices that depend on the temperature at which they are set and are insulated in the motors' windings; they open an electric contact when the maximum permissible permanent temperature is exceeded. ø 350 mm models feature motors with automatic thermal contacts. ø 500 – 560 – 630 mm models feature free thermal contacts that have to be connected to the protection circuits.

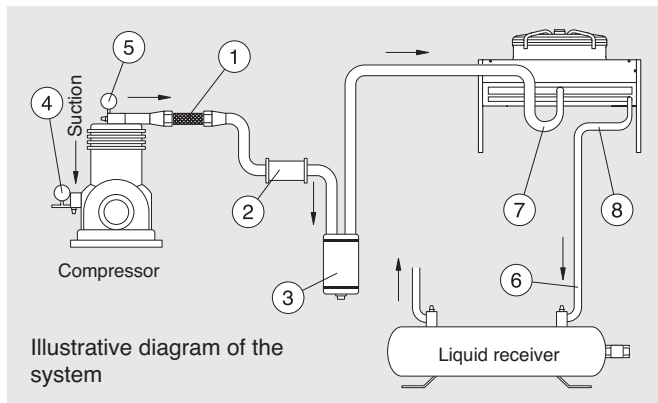
Warning

Strictly follow the wiring diagrams to prevent damage to the motor. Before using motor rpm adjustment systems, ensure that they are compatible with the same motors as incompatible systems can cause noise and damage; our Company assumes no responsibility for the performance of models with adjustment systems.

Exchanger connections

Always wear the safety equipment required by local legislation.

1. Check working order of the exchanger's circuit, acting on the valve on the inlet collector. All the condensers feature an exchanger with dry air at 2 bar.
2. Connections to the cooling circuit must be deoxidized, dehydrated copper pipes of a diameter that can ensure minimum loss of pressure and distribution of lubricating oil.
3. Braze with silver welding alloys; particular attention must be paid during this phase to prevent the heat from affecting existing welds on the collectors.
4. Install the vibration absorber and silencer on the delivery line between the compressor and condenser.
5. Create a vacuum in the cooling circuit and make it last for at least 2 hours.
6. Fill the circuit with cooling fluid and check for any leaks.



Illustrative diagram of the system

1. Anti-vibration joint connection
2. Delivery silencer
3. Oil separator
4. Low pressure gauge
5. High pressure gauge
6. Allow for a minimum difference in height of 1% between the outlet collector and the liquid receiver.
7. Inlet collector
8. Outlet collector

Advice on correct installation

1. The pipes should ensure minimum loss of pressure and low speed of the coolant guaranteeing flow of the oil.
2. Install the vibration absorber (feature n.1) and the silencer (feature n.2) on the delivery line between the compressor and the condenser, even if the compressor's discharge valves aren't particularly noisy.
3. Avoid bringing the air flow directly in contact with reflective surfaces or surfaces that could increase the condenser's noise levels.
4. It is forbidden to invert the inlet and outlet coolant collectors.
5. Place the condenser in an area where the battery can receive minimum exposure solar radiation: this can prevent changes to the condensation pressure.
6. For all installations, make sure that air flow does not come into contact with current from the opposite direction.

PLEASE NOTE:

Incorrect installation can considerably affect the condenser's noise level.

Checks before start-up

1. Tight fastening of all the electrical connections.
2. Levelness and solidity of the foundation base.
3. Tight fastening of the panels.
4. Size of maintenance areas
5. Supply voltage corresponding to the value on the data plate.
6. Free movement of the fan motors' fins.
7. No leaks of cooling liquid.
8. Removal of the LDPE protective film from the frame.

Warning

The device must not be started up until the system in which it is implemented has been declared conformant to the conditions of directive 98/37 EEC and to relative national legislation.

Checks after start-up

Initial start-up must be supervised by a qualified cooler technician.

1. Check the direction of the fan motor's rotation. Rotation in the wrong direction can compromise the machine's performance.
2. Check that the operating conditions (temperatures and pressures) are conformant to those in the manual.

Maintenance

Annual maintenance:

1. Check that all the electrical connection terminals are tightly fastened, especially the earth.
2. Check physical condition of the connecting cables. They must not be twisted and there must be no damage to their insulation.
3. Check working order of the system's safety, command and control devices.
4. 4. Ensure the panels and fan motors are securely in place.

When required:

1. Clean the finned pack with water, spraying it at a maximum pressure of 2 bar. It is on the exchanger parallel to the fins. Do not use solvents, aggressive, acid or abrasive agents, or ammonia based products. To increase the de-greasing capacity a solution

can be used that is 50% water and 50% ethyl alcohol.

2. Check for any leaks of cooling liquid.
3. To clean inside the exchanger, remove the upper covers and/or the conveyors (consult the chapter "Removing mobile parts"). Cleaning must be carried out more frequently the dustier the environment.

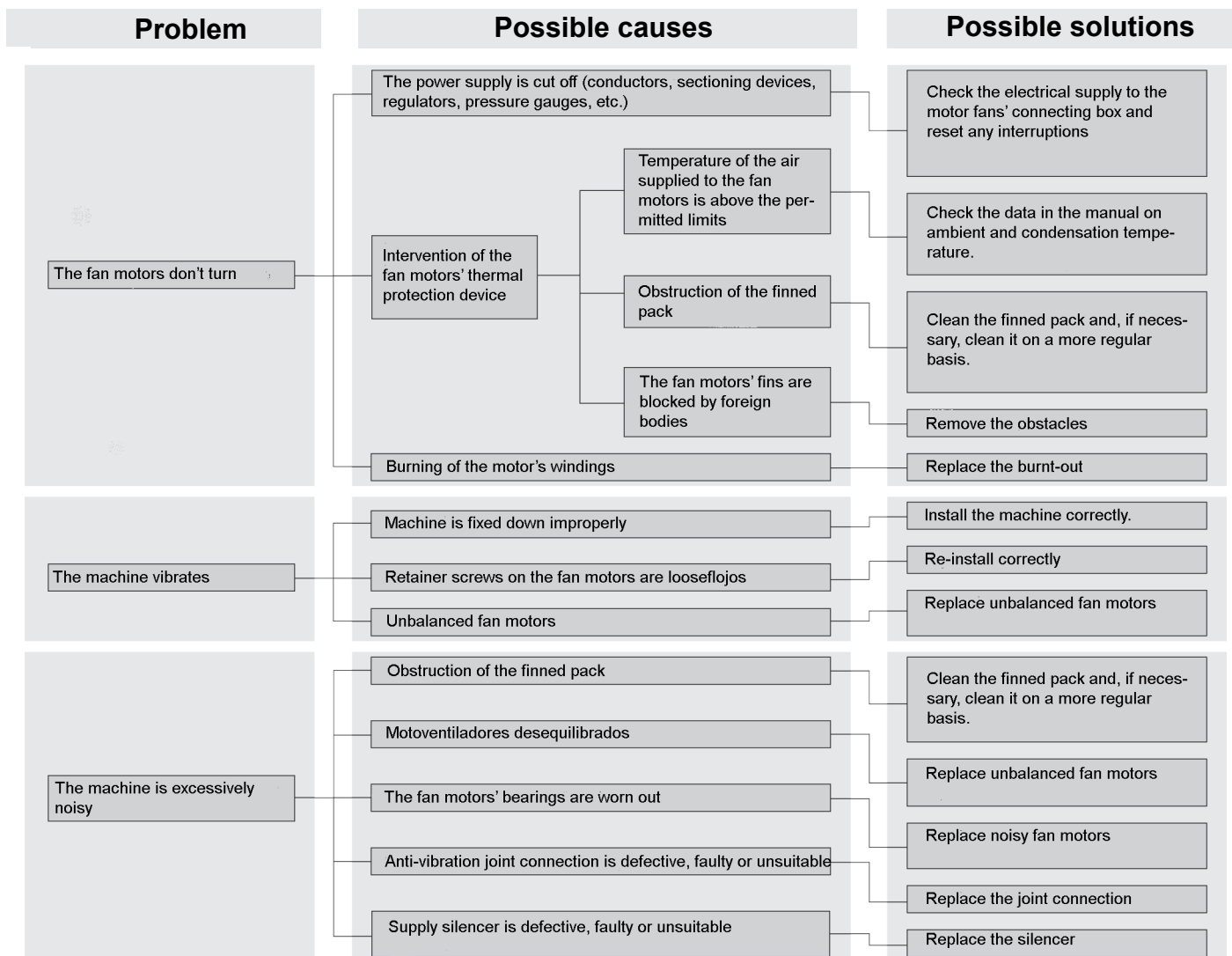
Spare parts

Only use type-approved spare parts.

Do not wait until the component is completely worn out. Replacing it in good time ensures good operation and durability of the machine.

Construction materials

The device comprises parts in copper, aluminium and steel. The only plastic materials are the screw protection caps, the connecting box and coating on cables for special versions.



Final recommendations

1. The user must not tamper with any of the components in the machine or operate the same in conditions not defined in this manual, as this could cause serious damage and forfeiture of the warranty.
2. Machine repairs and maintenance are the exclusive responsibility of the installer.
3. All recommendations on installation of the machine are purely indicative. The installer must install the machine in accordance with the specific conditions in the manual and in compliance with local legislation on installation of cooling and air conditioning devices.



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